

REMARKS

Claims 39-43 are cancelled. Claims 23, 33 and 36-38 are pending in the application.

Claims 39-43 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner indicates that the recited antireflective material comprising carbon lacks sufficient support in the specification. Without admission as to the propriety of the Examiner's rejection, claims 39-43 are cancelled.

Pending claims 27, 33 and 36-38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yao, U.S. Patent No. 6,133,613, in view of applicant's admitted prior art (figures 1-3). The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Claims 27, 33 and 36-38 are allowable over Yao as combined with applicant's admitted prior art for at least the reason that the references, individually or as combined, fail to disclose or suggest each and every limitation in any of the claims and fail to provide a basis for a reasonable expectation of success.

Independent claim 27 recites a layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ formed over and in physical contact with a metal silicide where the metal silicide is subjected to an anneal treatment after the layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ is formed. Claim 27 further recites a polysilicon layer, a gate oxide layer, a metal silicide layer and the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer and a silicon nitride layer all being patterned to form a gate stack. Yao discloses an embodiment having a tungsten silicide layer 506, forming a SiON layer 508 over the tungsten silicide

layer and forming a SiN layer on the SiON layer. Yao further discloses forming a photoresist layer 516 on the SiN layer and patterning the photoresist layer (col. 4, ll. 13-44).

Yao does not disclose or suggest the claim 27 recited layers patterned to form a gate stack. Further, Yao does not disclose or suggest the claim 27 recited layer comprising silicon, nitrogen, oxygen and hydrogen formed over and in physical contact with a metal silicide or the recited metal silicide being subjected to an anneal treatment after the layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ is formed.

As indicated in the applicant's specification at, for example, page 9, line 20 through page 10, line 2 and page 2, line 11 through page 3, line 3, providing the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer over the silicide layer prior to annealing protects the underlying silicide layer from exposure to gaseous oxygen during annealing. As further described, if the silicide layer is exposed to gaseous forms of oxygen during anneal, the silicide layer can become oxidized and adversely effect conductivity of the layer. Accordingly, the recited subjecting to an anneal treatment after formation of the $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ layer is formed confers specific benefits to the recited gate stack relative to the subject matter disclosed in Yao. Accordingly, independent claim 27 is not rendered obvious by Yao.

Applicant's admitted prior art is indicated as being relied upon as disclosing particular ranges of silicon, oxygen and nitrogen. However, the prior art material disclosed by the applicant is utilized in a manner differing from that recited in claim 27. Specifically, applicant's admitted prior art fails to disclose or suggest the recited $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ over and in physical contact with a metal silicide. The Examiner further indicates that composition of Yao's antireflective layer 506 is determined by optical properties. Applicant again notes that the material disclosed by Yao is not disclosed as comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$. Accordingly, the combination of applicant's admitted prior art and Yao fail to disclose or suggest the

claim 27 recited layer comprising $\text{Si}_x\text{N}_y\text{O}_z\text{:H}$ over and in physical contact with a metal silicide having the recited ranges of silicon, nitrogen and oxygen within a gate stack. Nor does the combination of Yao and applicant's admitted prior art provide a basis for a reasonable expectation of successfully achieving protection of silicide during annealing, reducing stress from an overlying silicon nitride layer and alleviating reflection of light during photolithographic processing utilizing a single layer (see applicant's specification at page 11, line 17 through page 12, line 3).

For the reasons discussed above, claim 27 is not rendered obvious by the combination of Yao and applicant's admitted prior art. Further, the recited structure and the recited process of producing such structure affords specific benefits to the recited gate stack relative to the art of record. Accordingly, claim 27 is allowable over Yao as combined with applicant's admitted prior art.

Dependent claims 33 and 36-38 are allowable over the combination of Yao and applicant's admitted prior art for at least the reason that they depend from allowable base claim 27.

For the reasons discussed above claims 27, 33 and 36-38 are allowable. Accordingly, applicant respectfully requests formal allowance of such claims in the Examiner's next action.

Respectfully submitted,

Dated:

February 11, 2005

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Reg. No. 48,711